USDA United States Department of Agriculture
Northeast Climate Hub

The University of Vermont

How Do Farmers Think about Climate Risk? A Study of On-Farm Decision Making in an Era of Climate Change

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CLIMATE FORECASTS SUGGEST FARMERS IN THE NORTHEAST WILL BE FACED WITH BOTH CHALLENGES AND OPPORTUNITIES AS THE CLIMATE CHANGES. CURRENTLY FARMERS AND OTHER LAND STEWARDS MANAGE THE RISKS CREATED BY CHANGING WEATHER PATTERNS IN MANY DIFFERENT WAYS.

Prior research looking at how farmers in the Northeast decide how they will adapt to changing conditions is scant. To fill this gap, 15 farmers from Vermont were interviewed in 2013-2014. Interviews took place 2 years after Tropical Storm Irene damaged many farms in the State. Findings revealed how the site-specific nature of climate impacts affect decisions and how farmers approach on–farm risk management. These insights can help policy makers and agricultural advisors develop more effective climate change policies and programs.

Dr. Rachel Schattman, a USDA Northeast Climate Hub researcher, is the lead author of this study that looks at how farmers in the State of Vermont view climate change. The project was completed in 2016 as part of her doctoral research at the University of Vermont (UVM). Schattman worked with UVM faculty members David Conner and V. Ernesto Méndez through the Vermont Agricultural Resilience in a Changing Climate Initiative (VAR). The study bridges several key disciplines, including agriculture, sociology, and climate science. Results offer critical insights into different aspects of climate change adaptation on Vermont farms.

HOW DO VERMONT FARMERS THINK ABOUT CLIMATE-RELATED RISK?

In this study, Vermont farmers identified many site-specific risks that they associate with weather fluctuations and climate change. From their perspective, these risks are not new. Rather, they represent familiar risks that are being intensified by recent climate changes. Dr. Schattman found that farmers consider both vulnerabilities and opportunities when deciding how to manage their farms. What each farmer perceived as the greatest risks was influenced by their individual situation. The specific climate-related risks that farmers in this study talked about were grouped into the two broad categories: ecological and economic. Some concerns spanned both categories.

ECOLOGICAL RISK

Farmers voiced their uncertainty about how future extreme weather would affect their land, particularly in areas prone to flooding or erosion. They were especially concerned with the potential for extreme rainfall events during critical farming periods. Heavy rain in early-spring and late-fall could limit their ability to produce salable goods. Other concerns focused on whether or not they should plant crops in locations that were vulnerable to flooding, and the risks posed by pest outbreaks. When planning long-term changes to land management, farmers ultimately sought to balance trade-offs between different kinds of risks.

ECONOMIC RISK

Farmers were worried about both short-term and long-term economic risks. Their main concerns included: (a) market volatility, (b) crop failure, (c) insecure land tenure, and (d) financial stress from adapting to climate change. Because household income is tied to their farm income, farmers expressed concern that their financial well-being is also vulnerable to extreme weather. Indeed, farmers reported significant financial losses due to Tropical Storm Irene, which occurred two years before these interviews.

HOW DO VERMONT FARMERS ADDRESS CLIMATE-RELATED RISK?

Farmers in Vermont are actively adapting to changing weather patterns. A variety of approaches, including traditional conservation practices, are being used. However, uncertainty about timing and severity of extreme weather events adds anxiety to an already challenging planning process. As a result, many farmers reported that they did not know how to best prepare for climate change. Personal experiences with extreme weather, such as Tropical Storm Irene, did influence their decisions. Participants who experienced significant damage during an extreme weather event were more likely to adopt proactive strategies.

CLIMATE RISK MANAGEMENT STRATEGIES REPORTED BY THE FARMERS IN THIS STUDY

**like Community Supported Agriculture (CSA)*

IMPLICATIONS

Dr. Schattman also considered the psychological factors that affect perceptions and decisions Vermont farmers have about climate risk. Her research offers valuable insight for policy makers and anyone working to support agricultural resilience to climate change. Results indicate that proactive planning for climate risks on farms is influenced by the personal experiences farmers had with extreme weather, especially flooding. Programs and policies that integrate these findings with forecasting can help farmers prepare for and adapt to these risks. Having farmers in the Northeast share ways they are adapting to climate change could also help others who want to begin addressing climate risks on their own farms.

RESEARCH ACCESS

The full publication about this study can be accessed here: **https://elementascience.org/articles/131**

The mission of the **USDA NORTHEAST CLIMATE HUB** is to develop and deliver science-based knowledge and practical information for land managers and farmers to support their decision making related to climate impacts. We work in partnership with local, state, and federal governments, land grant institutions consultants, and private organizations reaching across twelve states from Maine to West Virginia and the District of Columbia.

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